UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/694,005	10/28/2003	Yojiro Matsueda	117554	3671

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OLIFF & BERRIDGE, PLC	BODDIE, WILLIAM

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Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
Office Action Summary	10/694,005	MATSUEDA ET AL.
	Examiner	Art Unit	
	William Boddie	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8,11-24 and 26-30* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8,11-24 and 26-30* is/are rejected.

7)☒ Claim(s) *2* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *24 August 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☒ All b)☐ Some * c)☐ None of:

      1.☒ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *10/17/06*.

4)☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

1.   In an amendment dated, August 24th, 2006, the Applicant amended claims 1-8,

11-15, 22-24 and 26. The Applicant also cancelled claims 9-10 and 25. Currently

claims 1-8, 11-24, and 26-30 are pending.

Response to Arguments

2.   Applicant's arguments with respect to claims 1-8, 11-24 and 26-30 have been

considered but are moot in view of the new ground(s) of rejection.

Claim Objections

3.   Claim 2 is objected to because of the following informalities: claim 2 currently

requires that the sum of the two allocated sub-frames be 2^n times as large as the

shortest sub-frame amongst n sub-frames of the plurality of sub-frames. Taking the

Applicant's fig. 6 embodiment as an example the sum equals 32. There are, however, 7

sub-frames in figure 6, thus requiring that the sub-frame sum equal 128. It appears the

Applicant intended to define "n" as the number of sub-frames excluding the two

allocated sub-frames.

Expressly defining the "n" variable in each claim will likely help to overcome the

current objection and any further objections that may arise. This claim will be examined

based on this assumption. Appropriate correction is required.

Claim Rejections - 35 USC § 102

4.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5.   Claims 1-8, 11-12, 22-24 and 30 are rejected under 35 U.S.C. 102(b) as being

anticipated by Ohtaka et al. (US 6,151,000).

With respect to claim 1, Ohtaka discloses, an electro-optical device,

comprising:

a plurality of pixels, each of the plurality of pixels having an electro-optical

element (col. 1, lines 4-10; col. 4, lines 33-36), brightness of each of the electro-optical

elements being set for each of a plurality of sub-frames (col. 4, lines 36-48; fig. 7d),

which constitute one frame of a period (1 field is equivalent to one frame in fig. 7d) and

each have a predetermined period (clear from fig. 7d), so that at least two levels of

brightness can be set for one frame (col. 4, lines 44-48); and

a sub-frame having a longest period among the plurality of sub-frames being

divided into a least two allocated sub-frames (SF1 and SF6 in fig. 7d; col. 8, line 62 –

col. 9, line 2), and at least a sub-frame among the plurality of sub-frames having a

period shorter than the allocated sub-frames being disposed between the at least two

allocated sub-frames (clear that SF2,3 and SF5 are all shorter periods than SF1 and

SF6).

With respect to claim 2, Ohtaka discloses, the electro-optical device according

to claim 1 (see above), the sum of the period of the at least two allocated sub-frames

(col. 8, line 29; largest luminous weight is 16, therefore the sum of the two divided sub-

frames is 16) being set to 2^n times as long as a sub-frame having a shortest period

(shortest period or smallest luminous weight is 1) among N sub-frames of the plurality of

sub-frames (there are 4 sub-frames remaining after the divided sub-frames are discounted; as such it is clear 16 is 2^4 times larger than 1).

With respect to claim 3, Ohtaka discloses, the electro-optical device according to claim 2 (see above), a sub-frame having the longest period (Sub4 period is 8 in fig. 7d) among the plurality of sub-frames excluding the at least two sub-frames being half as long as the sub-frames having the longest period among the plurality of sub-frames (8; clear this is half of 16 , which corresponds to the longest sub-field prior to being divided).

With respect to claim 4, Ohtaka discloses, the electro-optical device according to claim 1 (see above), the two sub-frames (SF1 and SF6 in fig. 7d) not being arranged consecutively in one frame of a period (clear from fig. 7d; col. 8, line 62 – col. 9, line 4).

With respect to claim 5, Ohtaka discloses, an electro-optical device, comprising:

a plurality of pixels, each of the plurality of pixels having an electro-optical element (col. 1, lines 4-10; col. 4, lines 33-36), brightness of each of the electro-optical elements being set for each of a plurality of sub-frames (col. 4, lines 36-48; fig. 7d), which constitute one frame of a period (1 field is equivalent to one frame) and each have a predetermined period (clear from fig. 7d), so that at least two levels of brightness can be set for one frame (col. 4, lines 44-48), and

lengths of the plurality of sub-frames excluding a sub-frame having a longest period (SF1 and SF6 in fig. 7d) being set to a period in binary weighted (col. 8, line 29, for example); and

the sub-frame having the longest period among the plurality of sub-frames being

divided into at least two allocated sub-frames (col. 8, line 62 – col. 9, line 2), and

at least a sub-frame among the plurality of sub-frames having a period shorter

than the allocated sub-frames being disposed between the at least two allocated sub-

frames (clear that SF2,3 and SF5 are all shorter periods than SF1 and SF6).

With respect to claims 6, Ohtaka discloses, the electro-optical device according

to claims 5 (see above), the two sub-frames (SF1 and SF6 in fig. 7d) not being arranged

consecutively in one frame of a period (clear from fig. 7d; col. 8, line 62 – col. 9, line 4).

With respect to claim 7, Ohtaka discloses, an electro-optical device,

comprising:

a plurality of pixels, each of the plurality of pixels having an electro-optical

element (col. 1, lines 4-10; col. 4, lines 33-36), brightness of each of the electro-optical

elements being set for each of a plurality of sub-frames (col. 4, lines 36-48; fig. 7d),

which constitute one frame of a period (1 field is equivalent to one frame) and each

have a predetermined period (clear from fig. 7d), so that at least two levels of brightness

can be set for one frame (col. 4, lines 44-48); and

the sub-frame having the longest period among the plurality of sub-frames being

divided into at least two allocated sub-frames (col. 8, line 62 – col. 9, line 2), and

at least a sub-frame among the plurality of sub-frames having a period shorter than the

allocated sub-frames being disposed between the at least two allocated sub-frames

(clear that SF2,3 and SF5 are all shorter periods than SF1 and SF6), and

a sub-frame having the longest period among n (n denotes a natural number)

sub-frames (SF4 in fig. 7d) of the plurality of sub-frames, excluding the at least two

allocated sub-frames (SF1 and SF6; n is seen as 4), being set to 2^{n-1} times as long as a

sub-frame having the shortest period (SF2 in fig. 7d) among the n sub-frames (SF4 is

equal to $2^3=2^{4-1}$; sub1 is equal to 1) and brightness for the one frame can be set to 2^{n+1}

levels (col. 8, lines 28-32 discusses the possibility of $32=2^{4+1}$ levels).

With respect to claim 8, Ohtaka discloses, the electro-optical device according

to claim 7 (see above), the two sub-frames (SF1 and SF6 in fig. 7d) not being arranged

consecutively in one frame of a period (clear from fig. 7d; col. 8, line 62 – col. 9, line 4).

With respect to claim 11, Ohtaka discloses, an electro-optical device,

comprising:

a plurality of pixels, each of the plurality of pixels having an electro-optical

element (col. 1, lines 4-10; col. 4, lines 33-36), brightness of the electro-optical element

being set for each of a plurality of sub-frames (col. 4, lines 36-48; fig. 7d), which

constitute one frame (one field is equivalent to one frame) of a period and each have a

predetermined period (clear from fig. 7d), so that at least 2^n levels of brightness (n=4; 2^4

≤ 32 levels possible; col. 8, lines 28-32; col. 9, lines 2-4) can be set for one frame,

number of the plurality of sub-frames being n+1 or more (number of sub-frames

in fig. 7d is 6 ≥ 4+1), and

the sub-frame having the longest period among the plurality of sub-frames being

divided into at least two allocated sub-frames (col. 8, line 62 – col. 9, line 2), and at least

a sub-frame among the plurality of sub-frames having a period shorter than the

allocated sub-frames being disposed between the at least two allocated sub-frames

(clear that SF2,3 and SF5 are all shorter periods than SF1 and SF6).

With respect to claim 12, Ohtaka discloses, the electro-optical device according

to claim 11 (see above), a sub-frame having a longest period (SF4=8) among the

plurality of sub-frames, excluding the at least two allocated sub-frames, being 2^{n-1} times

(4=n from claim 11; 2^3=8) as long as a sub-frame having a shortest period (SF2=1).

With respect to claim 22, as claim 22 is nothing more than a method step claim

having identical limitations to those recited in claim 4. Therefore claim 22 is rejected on

the same merits shown above in claims 1 and 4.

With respect to claim 23, as claim 23 is nothing more than a method step claim

having identical limitations to those recited in claim 6. Therefore claim 23 is rejected on

the same merits shown above in claims 5 and 6.

With respect to claim 24, as claim 24 is nothing more than a method step claim

having identical limitations to those recited in claim 8. Therefore claim 22 is rejected on

the same merits shown above in claims 7 and 8.

With respect to claim 30, Ohtaka discloses, an electronic apparatus (col. 1,

lines 4-11), comprising: the electro-optical device according to claim 1 (see above).

Claim Rejections - 35 USC § 103

6.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

7.   Claims 13-15 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Ohtaka et al. (US 6,151,000) in view of Wakitani et al. (US 5,940,142).

With respect to claim 13, Ohtaka discloses, an electro-optical device, which is

capable of setting at least two levels of brightness for one frame (col. 4, lines 44-48), the

electro-optical device comprising:

electro-optical elements that are controlled to take either an ON state or an OFF

state based on gray scale data for each of a plurality of sub-frames (col. 4, lines 35-47),

which constitute one frame of a period and each have a predetermined period (clear

from fig. 7d); and

the sub-frame having the longest period among the plurality of sub-frames being

divided into at least two allocated sub-frames (col. 8, line 62 – col. 9, line 2), and at least

a sub-frame among the plurality of sub-frames having a period shorter than the

allocated sub-frames being disposed between the at least two allocated sub-frames

(clear that SF2,3 and SF5 are all shorter periods than SF1 and SF6).

Ohtaka does not expressly disclose, that two of the plurality of sub-frames being

controlled to always concurrently take either the ON state or the OFF state.

Wakitani discloses, at least two of the plurality of sub-frames (sub8a and sub8b)

being controlled to always concurrently take either the ON state or the OFF state (col.

10, lines 38-40; also note the concurrent operation of sub8a/8b in fig. 3).

Ohtaka and Wakitani are analogous art because they are both from the same

field of endeavor namely grayscale sub-field design and driving schemes.

At the time of the invention it would have been obvious to one of ordinary skill in the art to concurrently drive the allocated sub-frames of Ohtaka, as taught by Wakitani.

The motivation for doing so would have been to provide a unique gray-scale value (16 in Ohtaka's case) that allows for additional gradations in the driving of the display.

Therefore it would have been obvious to combine Wakitani with Ohtaka for the benefit of additional gradations to obtain the invention as specified in claim 13.

.   **With respect to claim 14,** Ohtaka and Wakitani disclose, the electro-optical device according to claim 13 (see above).

Ohtaka discloses, the at least allocated two sub-frames having the same period of length (SF1 = SF6 is clear from fig. 7d; col. 8, line 62 – col. 9, line 2).

With respect to claim 15, Ohtaka discloses, the electro-optical device according to claim 13 (see above), the two sub-frames (SF1 and SF6 in fig. 7d) not being arranged consecutively in one frame of a period (clear from fig. 7d; col. 8, line 62 – col. 9, line 4).

With respect to claim 26, as claim 26 is nothing more than a method step claim having identical limitations to those recited in claims 11-15. Therefore claim 26 is rejected on the same merits shown above in claims 11-15.

8.   Claims 17 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohtaka et al. (US 6,151,000) in view of Shigeta et al. (US 6,297,788).

With respect to claim 17, Ohtaka discloses, the electro-optical device according to claim 1 (see above), the plurality of sub-frames (SF1-SF6 in fig. 7d), which are set for

a series of pixels among the plurality of pixels, ending substantially simultaneously

(clear from fig. 7d that the sub-frame sustaining period (grayed area) ends

simultaneously).

Ohtaka does not expressly disclose, that the series of pixels are connected to at

least two scanning lines.

Shigeta discloses, the series of pixels being connected to at least two scanning

lines (fig. 7a-7h).

Ohtaka and Shigeta are analogous art because they are both from the same field

of endeavor namely sub-field design to generate gray scale display.

At the time of the invention it would have been obvious to one of ordinary skill in

the art to set a series of pixels of Ohtaka that are connected to at least two scanning

lines, as taught by Shigeta.

The motivation for doing so would have been to prevent flicker in the display

(Shigeta; col. 2, lines 15-19).

Therefore it would have been obvious to combine Ohtaka with Shigeta for the

benefit of preventing flicker to obtain the invention as specified in claim 17.

With respect to claim 28, as claim 28 is nothing more than a method step claim

having identical limitations to those recited in claims 1 and 17. Therefore claim 28 is

rejected on the same merits shown above in claims 1 and 17.

9.   Claims 16, 18-21, 27 and 29 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Ohtaka et al. (US 6,151,000) in view of Adachi et al. (US 6,924,824).

With respect to claim 16, Ohtaka discloses, the electro-optical device according to claim 1 (see above), the plurality of sub-frames (SF1-SF6 in fig. 7d), which are set for a series of pixels among the plurality of pixels, starting and ending substantially simultaneously (clear from fig. 7d that the sub-frame sustaining period (grayed area) ends simultaneously).

Ohtaka does not expressly disclose that, the series of pixels are connected to one scanning line.

Adachi discloses, a gray scale driving method that selects a series of pixels that are connected to one scanning line (col. 6, lines 4-14).

Adachi and Ohtaka are analogous art because they are both from the same field of endeavor namely, sub-field design to obtain an effective gray scale.

At the time of the invention it would have been obvious to one of ordinary skill in the art to scan the series of pixels of Ohtaka that are connected to one scanning line, as taught by Adachi.

The motivation for doing so would have been to further decrease flicker as well as power conservation (Adachi; col. 6, lines 27-36).

Therefore it would have been obvious to combine Ohtaka with Adachi for the benefit of power conservation to obtain the invention as specified in claim 16.

With respect to claim 18, Ohtaka and Adachi disclose, the electro-optical device according to claim 16 (see above).

Adachi further discloses, pixels circuits (fig. 13), each of the pixel circuits including:

a first transistor (402 in fig. 13) put into a conductive state when the scanning line

(Gj) thereof is selected;

a capacitor element (404) holding a data signal supplied through the first

transistor (402);

a second transistor (405) switched to an ON state or an OFF state based on the

data signal held in the capacitor element (404); and

an electronic element (406) to which a driving current is supplied based on the

ON state of the second transistor (405; col. 2, line 60 – col. 3, line 20).

With respect to claims 19-21, Ohtaka and Adachi disclose, the electro-optical

device according to claim 18 (see above).

Adachi further discloses, the electronic element being a current-driven organic

EL element (col. 1, lines 26-30).

With respect to claim 27, as claim 27 is nothing more than a method step claim

having identical limitations to those recited in claim 16. Therefore claim 27 is rejected

on the same merits shown above in claims 1 and 16.

With respect to claim 29, as claim 29 is nothing more than a method step claim

having identical limitations to those recited in claims 1 and 18. Therefore claim 29 is

rejected on the same merits shown above in claims 1 and 18.

Conclusion

10.   Applicant's amendment necessitated the new ground(s) of rejection presented in

this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

11.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to William Boddie whose telephone number is (571) 272-0666. The examiner can normally be reached on Monday through Friday, 7:30 - 4:30 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amr Awad can be reached on (571) 272-7764. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

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10/31/06
wlb   AMR A. AWAD
                                                    SUPERVISORY PATENT EXAMINER